

REMARKS

I. Introduction

Claims 28 to 56 are pending in the present application. In view of the foregoing amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

II. Rejection of Claims 28 to 35, 38, 40 to 43 and 48 to 55 Under 35 U.S.C. § 103(a)

Claims 28 to 35, 38, 40 to 43 and 48 to 55 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of U.S. Patent No. 5,631,813 ("Ikeshita") and U.S. Patent No. 4,904,918 ("Bailey et al."). It is respectfully submitted that the combination of Ikeshita and Bailey et al. does not render these claims unpatentable for at least the following reasons.

Claim 28 relates to a converter system, including: at least one supply module configured to provide a unipolar, intermediate circuit voltage; at least one drive module powerable by the intermediate circuit voltage, each drive module including at least one inverter configured to power at least one electric motor; at least one buffer module configured to store energy; and a power cable electrically connecting the supply module to the buffer module. The buffer module is configured to be supplied with energy for periods of time when the intermediate circuit voltage exceeds a first critical value and an overall regenerative power of a first drive module exceeds a motive power of a second drive module to store the supplied energy. In addition, the buffer module is configured to supply the stored energy to at least one drive module when a total motive power of the at least one drive module exceeds the regenerative power to power the corresponding electric motor.

Although Applicant may not agree with the merits of the rejection, to facilitate matters, claim 28 has been amended to eliminate minor, typographical errors and to recite, in relevant part, that **the buffer module includes a capacitor and a diode, and a cathode of the diode is directly connected to a negative plate of the capacitor**, and claim 38 has been amended to conform with the amendments made to claim 28. Support for the above-mentioned feature may be found, for example, in Figure 1.

Neither Ikeshita nor Bailey et al. discloses, or even suggests, at least this feature. Ikeshita describes a regenerative AC/DC/AC power converter having an

inverter apparatus (2, 52), which includes an AC power supply (1) and a diode bridge (5) that the Office Action considers to constitute a supply module, a smoothing electrolytic capacitor (7) that the Office Action considers to constitute a buffer module, and an inverse conversion circuit(s) (9, 9a, 9b). In addition, the diode bridge (5) includes three diodes, whose cathodes are connected to capacitor (7) via current limiting resistor (6) or switch contacts (8). However, **the Office Action considers the electrolytic capacitor (7) to constitute a supply module, not a buffer module, and, as indicated in column 1, lines 30 to 33 of Ikeshita, diode bridge (5) converts alternating current to direct current, which function is fulfilled by the rectifier (1) of supply module (VM) of the present application.** In addition, **the three above-mentioned diodes of diode bridge (5) of Ikeshita are not connected directly to capacitor (7), but only indirectly via resistor (6) or switch contacts (8).** Bailey et al., in turn, describes a power conversion system (10) including a DC power source (12), an electric power chopper (36), an inverter (20) and first and second motors (16, 18). In addition, the power conversion system (10) further includes a bypass circuit (49) whose diode (48) is connected to a capacitor (56). However, **as is apparent from column 5, line 65 to column 6, line 6 of Bailey et al., capacitor (56) is not part of a buffer module, but part of an L-C electrical filter.** Accordingly, it is respectfully submitted that the combination of Ikeshita and Bailey et al. does not render claim 28 unpatentable for at least these reasons.

Claims 48 and 53 include features analogous to those of claim 28 and have been amended in a manner analogous to claim 28. Accordingly, it is respectfully submitted that the combination of Ikeshita and Bailey et al. does not render claims 48 and 53 unpatentable for at least the reasons set forth above.

As for claims 29 to 35, 38 and 40 to 43, claims 49 to 52 and claims 54 and 55, which respectively depend from, and therefore include all of the features of, claims 28, 48 and 53, it is respectfully submitted that the combination of Ikeshita and Bailey et al. does not render these dependent claims unpatentable for at least the reasons set forth above.

As for claims 54 and 55, it is respectfully submitted that the combination of Ikeshita and Bailey et al. does not render these claims unpatentable for the following additional reasons. As admitted on page 4 of the Office Action, neither Ikeshita, nor Bailey et al. discloses, or even suggests, the feature of claims

54 and 55 that a method for operating a buffer module in a converter system includes, in response to the intermediate circuit voltage exceeding a second critical value, flowing current through a braking resistor to dissipate energy when a total regenerative power of first drive modules exceeds the motive power of second drive modules. In addition, although the Office Action contends that modifying the combination of Ikeshita and Bailey et al. to have plural critical values would have been obvious, M.P.E.P. § 2144.04 (VI) relied upon by the Office Action relates to duplication of parts in a device, and not duplication of critical values. In addition, different actions are undertaken in response to the intermediate circuit voltage exceeding the first critical value (supplying the buffer module with energy) and the second critical value (flowing current through a braking resistor), so the Office Action's argument that the first and second critical values are duplicates of one another can hardly be considered tenable. Accordingly, it is respectfully submitted that the combination of Ikeshita and Bailey et al. does not render claims 54 and 55 unpatentable for these additional reasons.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

III. Rejection of Claims 36, 37 and 44 to 47 Under 35 U.S.C. § 103(a)

Claims 36, 37 and 44 to 47 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Ikeshita, Bailey et al., and U.S. Patent No. 6,367,273 ("Takagi et al."). It is respectfully submitted that the combination of Ikeshita, Bailey et al., and Takagi et al. does not render these claims unpatentable for at least the following reasons.

Claims 36, 37 and 44 to 47 ultimately depend from claim 28 and therefore include all of the features of claim 28. As set forth above, the combination of Ikeshita and Bailey et al. does not disclose, or even suggests, at least the feature of claim 28 that the buffer module includes a capacitor and a diode, and that a cathode of the diode is directly connected to a negative plate of the capacitor. Takagi et al. describes a refrigerator which includes an AC power source (1), a converter circuit (2), a smoothing capacitor (5), a resistor (6), an inverter (3), a motor (7) and a compressor (4). In addition, the converter circuit (2) includes a diode (26), which is connected to smoothing capacitor (5). However, **as is apparent from Figure 1 of Takagi et al., the cathode of diode (26) is connected to a positive**

plate of capacitor (5), and not to a negative plate. Accordingly, it is respectfully submitted that the combination of Ikeshita, Bailey et al., and Takagi et al. does not render unpatentable claims 36, 37 and 44 to 47, which depend from claim 28.

As for claims 37, 45 and 46, it is respectfully submitted that the combination of Ikeshita, Bailey et al., and Takagi et al. does not render these claims unpatentable for the following additional reasons. The combination of Ikeshita, Bailey et al., and Takagi et al. does not disclose, or even suggest, the feature of claims 37, 45 and 46 that **a drive circuit of an electronic circuit breaker is connected to a device configured to measure the intermediate circuit voltage.** Contrary to the assertion appearing on page 5, Section 3 of the Office Action, the switch (8) shown, for example, in Figure 1 of Ikeshita, is connected to a **current detector** (16), not to a device measuring an intermediate circuit **voltage**. The circuit element (71) referred to by the Office Action is a current returning diode, not a voltage-measuring device. In addition, as is apparent from Figure 1 and column 6, lines 40 to 42 of Takagi et al., resistor (28) is configured to detect **current**, not **voltage**. Furthermore, the resistor (28) is connected to the emitter of transistor (27), but the drive circuit (205) is not connected to resistor (28). Moreover, Bailey et al. does not cure the deficiencies of Ikeshita and Takagi et al. with respect to the above-mentioned feature. Accordingly, it is respectfully submitted that the combination of Ikeshita, Bailey et al., and Takagi et al. does not render claims 37, 45 and 46 unpatentable for these additional reasons.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

IV. Allowed Claims

Applicant notes with appreciation the indication that claims 39 and 56 are allowed.

V. Conclusion

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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